

## **A Garden-Controlling System**

### **FIELD OF THE INVENTION**

The present invention relates to an irrigation system and method.

5 More specifically, the present invention relates to a garden-controlling system and method that enables to control plurality of gardens by using dedicated software installed on a personal computer and/or an Internet web site.

### **BACKGROUND OF THE INVENTION**

Known irrigation systems are usually a stand-alone controller that opens and closes irrigation valves according to a time sequence. These systems are locally programmed and there is no central unit, which enables control of a plurality of such systems.

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The advantage of the present invention is that it provides an ability to control a plurality of gardens or a plurality of areas in a garden by using a garden controller that can be managed and programmed by a computing means or an Internet web site, with a friendly software, via any kind of  
20 communication method or system.

## **SUMMARY OF THE INVENTION**

According to the teaching of the present invention there is provided  
a garden-controlling system comprised of:

- a) a plurality of area-controllers, each of the area controller has  
5 a programming capability and communication capability and  
wherein each of the area-controllers capable to collect and  
transfer information;
- b) a garden-controller with a programming capability and a  
communication capability enables to communicate with a  
10 computing means and to communicate with each of the area-  
controllers in order to program, update and/or modify the  
area-controllers' program; and
- c) a programming-software is installed on a computing means,  
which enables it to program, update and/or modify the  
15 garden-controllers' program via the communication  
capability.

By a preferred embodiment of the present invention it is provided a  
garden-controlling system, wherein the programming-software operative  
20 fore:

- on-screen programming - a specific program for each of  
the area-controllers - of irrigation, fertilization,

illumination and apparatus activating of each area of a given garden;

- on-screen programming of the garden-controller;
- setup of the operation-criteria of each of the programs;
- 5     • pulling task-performance information and other collected information from the area-controllers; and
- update and/or modify each of the programs via the communication capability.

10       By another preferred embodiment of the present invention it is provided a garden-controlling system, further includes an Internet web site. The web site communicates with a plurality of garden-controllers and holds updated information regarding each garden that is controlled by the garden-controller and wherein the web site enables to pull updated  
15 information from each garden-controller and enables to use the programming-software to program, update and/or modify each of the garden-controllers' programs.

By another preferred embodiment of the present invention it is provided a garden-controlling system, wherein each of the communication capabilities can be one or plurality of the followings:

- phone line or wire communication;
- 5 • cellular communication;
- electromagnetic waves wireless communication;
- blue-toot communication;
- electro-optical communication; and/or;
- any other communication method or system.

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By another preferred embodiment of the present invention it is provided a garden-controlling system, wherein each of the area-controller operative – according to a program, a predetermined criteria or a command from the garden-controller - for at least one of the following:

- 15 • opening and closing irrigation valves;
- activating a water pump;
- opening and closing fertilization valves;
- activating a fertilization pump;
- turns illumination means on and off; and/or
- 20 • activating any other apparatus or system.

By another preferred embodiment of the present invention it is provided a garden-controlling system, further includes a plurality of sensors that are connected to at least part of the area-controllers and wherein each of the area-controllers collects information from the  
5 sensors, uses the information for local use and transmits the information to the garden-controller via the communication capability and wherein the programming-software can pull the information from the garden-controller.

10 By another preferred embodiment of the present invention it is provided a garden-controlling system, wherein the sensors could be any combination of the followings:

- rain sensor
- ground humidity sensor
- 15 • water supply sensor
- fertilizer sensor
- pressure sensor
- any other sensor

20 By another preferred embodiment of the present invention it is provided a garden-controlling system, wherein the programming-software enables to program each of the area-controller correspondingly to the

location of the area-controller, in order to activate irrigation, fertilization and illumination according to the location area structure and time sequence.

5 By another preferred embodiment of the present invention it is provided a garden-controlling system, wherein the garden- controller is programmed, using the programming software, to update or modify the area-controllers' program according to a predetermined criteria, sensors information that is collected in a specific area and/or commands from the  
10 programming-software.

By another preferred embodiment of the present invention it is provided a garden-controlling system, wherein the area-controller further includes a solar power supply.

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By another preferred embodiment of the present invention it is provided a garden-controlling system, wherein the area-controller and/or the garden- controller capable to transmit an alarm – to a predetermined communication address or phone number, via the communication  
20 capability – according to a predetermined criteria.

By another preferred embodiment of the present invention it is provided a garden-controlling system, wherein the area-controller and/or the garden- controller capable to receive a code from any communication apparatus and performs predetermined actions.

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According to another aspect of the present invention, it is provided a method for garden controlling comprising of the following steps:

- a) locating a plurality of area-controllers, each of the area controller has a programming capability and communication capability and wherein each of said area-controllers capable to collect and transfer information from a plurality of sensors;
- b) controlling, updating and modifying the area-controllers by means of a garden-controller, the garden-controller has a programming capability and a communication capability and enables to communicate with a computing means and to communicate with each of the area-controllers; and
- c) programming, updating and modifying the garden-controller by means of programming-software that is installed on a computing means, via the communication capability of the garden-controller.

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According to another aspect of the present invention, it is provided the method for garden controlling, further includes the step of enabling the connection of the garden-controller to an Internet web site, the web site holds update information regarding the garden-controller and wherein  
5 the web site enables to pull updated information from the garden-controller and enables to use the programming-software to program, update and/or modify each of the garden-controllers' program.

## 10 **BRIEF DESCRIPTION OF THE FIGURES**

The invention is herein described, by way of example only, with reference to the accompanying drawings. With specific reference now to the drawings in detail, it is stressed that the particulars shown are by way of example and for purposes of illustrative discussion of the preferred  
15 embodiments of the present invention only, and are presented in the cause of providing what is believed to be the most useful and readily understood description of the principles and conceptual aspects of the invention. In this regard, no attempt is made to show structural details of the invention in more detail than is necessary for a fundamental  
20 understanding of the invention, the description taken with the drawings making apparent to those skilled in the art how the several forms of the invention may be embodied in practice.



In the figures:

Figure 1 illustrates a block diagram of a preferred embodiment of an area-controller.

Figure 2 illustrates a block diagram of a single garden system.

5      Figure 3 illustrates a plurality of gardens and the way they are controlled by the system.

### **DESCRIPTION OF THE PREFERED EMBODIMENTS**

The principles and operation of the garden-control system according  
10 to the present invention may be better understood with reference to the drawing and the accompanying description.

The present invention is a garden-controller system. The system is built up from a plurality of area-controllers, a garden-controller that is  
15 located in each controlled garden in order to control the area-controllers in its' garden and a dedicated software installed on a computing means or in a dedicated web site on the Internet. The parts of the system have a communication capability and can communicate each other via a plurality of communication methods.

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Each of these area-controllers is programmed to operate and control the needed tasks in the area where the area-controller is located. The

program can be updated and/or modified by the garden-controller. The needed tasks include water valves controlling, light controlling, fertilization controlling, activating a camera to view the area, collecting information from a plurality of sensors and other local tasks.

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All the area-controllers in a garden are controlled by a garden-controller, which via a communication capability receives information from each area-controller, manages the area-controllers and capable to update and/or modify the program of each area-controller.

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With a dedicated software that is installed on a personal computer or alike or located in a dedicated web site, a user can receive information from a garden or a number of gardens and program whole tasks of the garden that can be performed automatically. The two-ways of communication between the user, the computer and the web site can be in any kind of communication method and enables the user to receive alarms from the garden-controller and to send a code to the garden-controller that is decoded to a predetermined program or task.

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Referring now to the drawing, Figure 1 illustrates a block diagram of a preferred embodiment of an area-controller 10. The area-controller 10

has a CPU and memory **11** to hold a program and information and to perform the program, which activates the command unit **12** to perform tasks and use the communication unit **13** to establish two-ways communication. The area-controller **10** – via the command unit **12** – can  
5 control the water valves **14** and fertilization valves **15** according to the information that is received from a water-supply-measure **18** and fertilization-supply-measure **20**. The area-controller **10** can also turn on or off the garden illumination **16** and activate a camera **17** for sending garden images to the user. The area-controller **10** has a plurality of  
10 sensors **21** to collect different kinds of information e.g., rain sensor, ground humidity sensor, water supply sensor, fertilizer sensor, pressure sensor or any other sensor. The power that is supplied to the area-controller **10** can differ, including a solar power supply **22**.

15        Figure 2 illustrates a block diagram of a single garden system. A plurality of area-controllers **10** are spread in a garden each one in a specific area. The area-controllers **10** are connected – either by a wireless connection **24a** or physical connection **24b** – to a garden controller **23**, which manages the area-controllers **10** and are capable to modify or

update their programs. The garden-controller **23** holds in memory the whole information, programs and parameters regarding to each area-controller **10**. In order to program the garden-controller **23** or to update or modify the program, the garden-controller **23** can be connected to a  
5 computer **25** or to a web site on the Internet **26** or both. Dedicated software is installed in the computer **25** or on the web site **26**. The information corresponding to the garden is saved in the garden-controller's **23** memory and in additional can be saved in the computers' memory **25** and on the web site **26**. By using a remote computer **27** that  
10 is connected to the Internet **26**, a user can pull information corresponding to his garden and capable – via the web site **26** – to program, update or modify the program of the garden-controller **23**. The garden-controller **23** can send an alarm to the user – via the computer **25** or by E-mail via the web site **26** or to a predetermined phone number. In such a case the  
15 user capable to send a code – using the communication capability of the garden-controller **23** – and this code is decoded to predetermined commands.

Figure 3 illustrates a plurality of gardens and the way they are  
20 controlled by the system. The system enables to manage a plurality of

garden from a single PC **25&27** or web site **26**. In the figure garden A **28**, garden B **29** and garden C **30** are controlled from a single PC **25** or from the web site **26**. In each garden a plurality of area-controllers **10** are spread in each garden and connected to the local garden-controller **23**.

5 The garden-controllers **23** can be connected to a PC **25** or to a web site **26**, which can be used from a remote PC **27**. The information corresponding to each garden is saved in the computers' memory **25** and in the web site **26**. In this way the user can pull information regarding to each garden and, according to the pulled information, can update or

10 modify the program of each garden-controller **23**. Each of the garden-controllers **23** can send an alarm to the user – via the computer **25** or by E-mail via the web site **26** or to a predetermined phone number. In such a case the user capable to send a code to a specific garden-controller **23** – using its' communication capability – and this code is decode to

15 predetermined commands.

Although the invention has been described in conjunction with specific embodiments thereof, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art,

20 accordingly, it is intended to embrace all such alternatives, modifications

and variations that fall within the spirit and broad scope of the appended claims.